

3rd YEAR ICBE_SEMESTER 6_ORIENTATION GB

Practical info

Location(s)

 Toulouse

Bioseparation, enzyme kinetic and gene regulation



ECTS
7 crédits



Hourly volume
116h

Introducing

Objectives

Objectives:

At the end of this module, the student will have understood and be able to explain (main concepts):

- the mechanisms of separation techniques usually used in biochemistry-biotechnology, more particularly in the case of biocatalysts: techniques of precipitation (proteins, nucleic acids), techniques of centrifugation and ultracentrifugation, membrane techniques (MF, UF, NF) and electrophoretic techniques;
- the bases of the measure of the reaction rate of an enzyme, the various models allowing the description of the behaviour of an enzyme, from the simplest to the most complex, the effect of physico-chemical parameters such as the pH or the temperature
- the main pathways of gene expression regulation

The student will be able to:

- choose the most suited method of bioseparation to a context by knowing correctly its functioning
- to use from a practical point of view the equipment and the techniques adapted in the purification of proteins and to the control of their purification (low and medium pressure chromatography, electrophoresis)
- to establish complex enzymatic equations of reaction rate by means of models.
- to determine experimentally the various kinetic parameters of an enzyme as well as its optimal conditions of functioning

- explain and analyse data concerning gene expression regulation in prokaryotic and eukaryotic organisms

Necessary prerequisites

Necessary knowledge:

Organic chemistry (I2BECH11), structural biochemistry (I2BEBC11), transport phenomena and reaction in fluids (I2BETF11). Analytical method (I2BEAN11). Molecular biology.

Practical info

Location(s)

 Toulouse

Organic and structural chemistry



ECTS

6 crédits



Hourly volume

80h

Introducing

Objectives

Objectives:

At the end of this module, the student will have understood and be able to explain (main concepts):

- the theory and practice of the main analytical techniques used in chemistry and biochemistry.
- the main reaction mechanisms encountered in chemistry and biology.

The student must be able to:

- solving structure of chemical compounds and simple biochemistry molecule using analytical methods: NMR, MS, IR, UV.
- Understand and explain the reaction mechanisms.
- Achieve a multidisciplinary experimental project (bibliographical search, devise a schedule of manipulation, carry out manipulations, make a presentation of the main results)

Practical info

Location(s)

 Toulouse

Necessary prerequisites

Necessary knowledge:

- UF Chemistry - Biotechnology (I1ANCH11)
- UF Organic Chemistry (I2BECH11)
- UF Structural Biochemistry (I2BEBC11)
- UF Analytic Methods I (I2BEAN12)

Production sectors

 **ECTS**
3 crédits

 **Hourly volume**
8h

Introducing

Objectives

Objectives:

At the end of this module, the student will have understood and be able to explain (main concepts):

the main actors in the sectors on which the "Biochemical Engineering" specialty leads in France and abroad, their relations and their market share

the structuring of the sector: is it made up of large national or international groups, SMEs, start-ups ... Are these multinationals, family businesses ...?

the evolution of this structuring: is the sector stable over time or does it know (or has it known in the recent past) changes (eg mergers)?

the location of the different activities (production, R & D ...). Are they done in France, in Europe ...?

the structuring the capital of these players (share of turnover devoted to R & D, communication ...)

Practical info

Location(s)

 Toulouse